

IN THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Claims 1-14 (Canceled)

15. (Presently Amended) A method of monitoring process exhaust gas containing a plurality of gas components generated from a process carried out in a process chamber for a process object under predetermined process conditions,

said method comprising the steps of:

sampling the process exhaust gas at an exit of an exhaust vacuum pump that evacuates the process exhaust gas from the process chamber;

analyzing the components of the sampled process exhaust gas;

comparing the gas analysis result with a reference analysis result of an analysis of process exhaust gas generated as a result of a process carried out under reference process conditions; and

generating and outputting a signal indicating a process status error ~~when it is determined that the amount of at least one gas component of the process exhaust gas has changed to an amount that is outside a predetermined range set around a reference value obtained from the reference analysis result~~ based on a result of the comparison between the gas analysis result and the reference analysis result.

16. (Original) The method as claimed in claim 15, wherein the step of analyzing the components of the process exhaust gas is carried out by a Fourier-transform infrared spectroscope.

17. (Presently Amended) The method as claimed in claim 15 ~~or 16~~, further comprising ~~the~~ a step of giving an alarm in accordance with the signal indicating a process error.

18. (Presently Amended) The method as claimed in claim 15 ~~or 16~~, further comprising ~~the~~ a step of automatically adjusting process conditions in accordance with the signal indicating a processing error.

Claims 19-25 (Canceled)

26. (Newly Added) The method as claimed in claim 15, wherein the step of comparing includes a step of storing the analysis result from the gas analysis means in a memory so as to compare a plurality of analysis results with the reference analysis result.

27. (Newly Added) The method as claimed in claim 15, wherein the step of comparing includes a step of storing a plurality of analysis results in a memory so as to compare each of a plurality of analysis results with each corresponding one of the plurality of reference analysis results.

28. (Newly Added) The method as claimed in claim 15, further comprising a step of switching process exhaust gas passages for sampling the process exhaust gas at a plurality of locations.

29. (Newly Added) The method as claimed in claim 28, further comprising a step of controlling the step of analyzing and the step of switching.

30. (Newly Added) The method as claimed in claim 29, further comprising a step of storing comparison data resulting from the step of comparing in a comparison result memory so that a comparison operation for each process is performed by supplying a signal from

outside in the step of controlling and the comparison data is stored to the comparison result memory.

31. (Newly Added) The method as claimed in claim 16, further comprising the steps of:

introducing nitrogen gas used in a zero calibration operation of the Fourier-transmission infrared spectroscope to a gas introduction unit of the Fourier-transform infrared spectroscope; and

controlling the step of introducing nitrogen gas so that a zero calibration operation is performed at predetermined regular intervals.

32. (Newly Added) The method as claimed in claim 15, further comprising a step of adjusting a flow rate of the sampled process exhaust gas to be analyzed.

33. (Newly Added) The method as claimed in claim 32, further comprising a step of giving an alarm when the flow rate of the sampled process exhaust gas to be analyzed is outside a predetermined range.

34. (Newly Added) The method as claimed claim 15, further comprising a step of supplying a constant flow rate of inert gas to a vacuum pump for exhausting the process exhaust gas.

35. (Newly Added) The method as claimed in claim 15, wherein the step of comparing includes a step of determining from the comparison result whether or not the amount of at least one gas component of the process exhaust gas has changed to an amount

that is outside a predetermined range set around a reference value obtained from the reference analysis result, and the process status indicated by said signal represents a process error.